Diagnosis

Hardware/Software

WABCO

Diagnosis

Hardware/Software

User Manual

Edition 6

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Abbreviations

ABS	Anti-Lock Braking System
ASR	Anti-Slip-Regulation
ATC	Automatic Temperature Control
CAN	Controller Area Network; asynchronous, serial bus system for networking control devices in vehicles
EBS	Electronic Braking System
ECAS:	Electronically Controlled Air Suspension
ECU	Electronic Control Unit
ENR	(German: Elektronische Niveauregelung); Electronic Levelling Control
EPB	Electro-Pneumatic Brake
EPS	Electronic Power Shift; electro-pneumatic shift control
ESAC	Electronic Shock Absorber Control
ETS	(German: Elektronische Türsteuerung); Electronic Door Control System
HPB	Hydraulic Power Brake
HVAC	(Engl. HVAC); Heating, Ventilation and Air Conditioning
IVTM	Integrated Vehicle Tire Pressure Monitoring System for commercial vehicles
LSV	Automatic load-dependent brake force control (load sensing valve)
MTS	(German: Modulare Tür-Steuerung); Modular door control for buses
ODR	Operating Data Recorder
PC	Personal Computer
SAE	Society of Automotive Engineers
TCE	Trailer Central Electronics
TEBS	Electronic Braking System for Trailers
TECAS	Electronically Controlled Air Suspension for Trailers
USB	Universal Serial Bus; serial bus system for connecting a computer to external devices
VCS	Vario Compact System
ZBR	(German: Zentraler Bordrechner); Central board computer

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1 Safety instructions

- Read this document carefully. All instructions, notes, and safety instructions must be adhered to in order to avoid personal injury and/or material loss. WABCO will only guarantee the safety, reliability and performance of its products and systems if all information provided in this document is observed. Any deviating procedure may lead to incorrect results on the vehicle.
- Only trained and qualified technicians are permitted to perform work on the vehicle.
- Always follow specifications and instructions of vehicle manufacturer.
- Always comply with the company's regulations for the prevention of accidents and national regulations.
- Wear any necessary protective clothing.
- The workplace has to be dry, well lit and sufficiently ventilated.
- Do not drive on public roads while a safety system of the vehicle is in diagnostic mode.
- Before you perform any further activities on this system you must query the current fault status again after you have eliminated the fault or have cleared the diagnostic memory. This is the only way to ensure that the fault has been eliminated.
- If you have performed a Service Reset (reset of the date or the odometer reading), you must query the current service status before you perform any other activities on the control unit.

Risk of suffocation!

- Perform diagnosis on vehicles with the engine running only in spaces equipped with an exhaust extraction system, or outdoors.

  Breathing in carbon monoxide can cause serious damage to health and even death in enclosed spaces without an exhaust extraction system.

Danger of bodily injury!

- Pedal actions can cause serious injuries if persons are near the vehicle.

  Ensure that pedal action is prevented by means of the following measures:

  – Switch the gearbox to "neutral" and actuate the hand brake.
  – Use brake wedges to secure the vehicle against rolling away.
  – Attach a clearly marked note on the steering wheel saying that work is being performed on the vehicle and that the pedal must not be applied.
- Do not actuate system components when there is a possibility of persons being in the danger zone of the component to be actuated.
- Do not wear a tie, wide clothing, open hair, bracelets or watches, etc. when working on the vehicle, especially if the engine is running. Keep your hands and hair away from moving parts.

Fire hazard!

- Only use lamps with a ground connection.
- Keep flammable material (cloth, paper, etc.) away from the exhaust system.
- Do not smoke at your workplace.
- Check the electrical lines to make sure they are properly insulated and fastened.

2 Introduction

While previously a separate test device was required for the diagnosis of each system on the commercial vehicle, a PC or a laptop with the corresponding Diagnostic Software is now sufficient for diagnosis.

PC Diagnosis comprises multiple types of diagnostics:

- SD – WABCO System Diagnostics (for WABCO systems and components)
- WABCOWürth W.EASY® Complete Premium (for systems by WABCO and other manufacturers)
- XD – WABCO Expert Diagnostics (for systems by WABCO and other manufacturers)

Special test devices for measurements complete the diagnostics program.

3 SD – System Diagnostics

"System Diagnostic Software" designates the system diagnostics developed exclusively for WABCO systems. SD are special programs with extensive functions.

The WABCO System Diagnostics allows you to perform a diagnosis on all electronic WABCO systems.

For the diagnosis, you require

- a standard PC or laptop,
- the WABCO System Diagnostic Software,
- a Diagnostic Interface,
- and cables to match the vehicle type

3.1 Diagnostic Software

The speed at which vehicle technology advances, with a growing functional range and intricate safety engineering, also produces the need for corresponding diagnostic software. WABCO provides diagnostic software for all electronic WABCO systems in a variety of vehicles.

There are three ways to obtain the Diagnostic Software.

- as a USB flash drive version (product number 446 301 XXX 0)
- online as a Single Download (product number 246 301 XXX 0)

  The XXX value in the order number stands for the currently available language version of the Diagnostic Software(see table 3-1 "Program overview of the Diagnostic Software (07/2010)", page *12*).
- as part of a WABCO System Diagnostics Subscription.

For the diagnosis of multiple WABCO systems, WABCO offers you four different packages with Diagnostic Software via the Internet. These contain numerous diagnostic programs at one very low price. The most recent version of the programs can be downloaded from the internet at any time ready for immediate use.

WABCO SD Software has the advantage that you are quickly informed of new versions and you can obtain all newly developed Diagnostic Software at no extra cost.

The means of graphic representation provided by the PC make diagnosis clear and structured. Thanks to detailed repair information and circuit diagrams with measured values, successful diagnosis and repair is made easy and fast.

The diagnosis with the Diagnostic Software can be performed by any user. If parameters need to be changed or a calibration needs to be carried out, authorisation (PIN) is required (see chapter 3.1.9 "Extended authorisation (PIN)", page *16*).

You can obtain this PIN through the respective training at the WABCO University. More information on WABCO University training courses can be found on the Internet under www.wabco-university.com.

Below you will see excerpts from the software for the Trailer EBS E system to illustrate the Diagnostic Software,.

Main menu

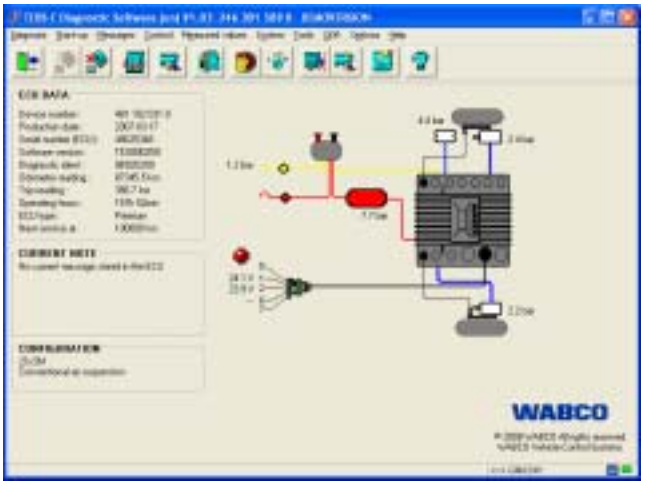


fig. 3-1: Main menu of the Diagnostic Software Trailer EBS E

- ECU Data
- Display of the current diagnostic memory
- System configuration
- Current measured values

Calibration

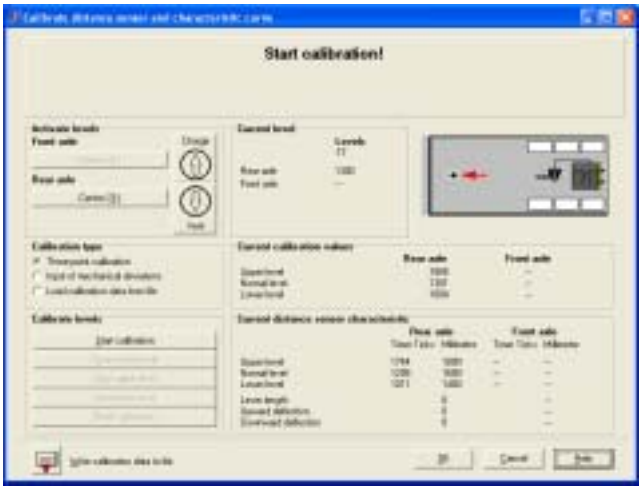


fig. 3-2: Calibration menu of the Diagnostic Software Trailer EBS E

- Activate levels
- Current calibration values of distance sensor and pressure sensor
- Perform calibration

3.1.1 Ordering the WABCO Diagnostic Software

– Start your browser and enter the following Internet address: http://www.wabco-auto.com/mywabco

  If you have already have a myWABCO account, log into your myWABCO account with your user name and password.

If you do not have a myWABCO account, you will have to set one up.

– Click on the "New registration" link and fill out the necessary fields.

  Since you do not yet have the access data for a WABCO SD subscription, please leave the respective fields empty in step 3.

You will receive an e-mail within a short time to confirm your e-mail address.

– Click on the link in this e-mail message to activate your account.
– Log into your myWABCO account with your user name and password.
– Left-click in the quick-access menu on "Order Diagnostic Software".

  If you receive a safety notice from your Internet browser now, choose the option to display the hidden objects that are unsafe.

➔ Your personal data is shown on the following screen.

– Click the "New order" button.

– Choose the respective Diagnostic Software package (see chapter 3.1.3 "Package overview", page *11*).

3.1.2 Where do I find the WABCO Diagnostic Software?

– Start your browser and enter the following Internet address: http://www.wabco-auto.com/mywabco
– Log into your myWABCO account with your user name and password.
– Left-click in the quick-access menu on "Download Diagnostic Software".

Her you find an overview of the most important diagnostic programs in your own language.

You can filter these according to criteria such as package content for instance. You can download any of the programs you see, provided they are included in your WABCO Diagnostic Software subscription.

Not all programs are offered in all languages. In order to obtain a complete overview of the Diagnostic Software, switch the language selection box to English.

3.1.3 Package overview

You can choose from 4 software packages.

Full 246 301 900 0

Almost all available programs for the PC diagnosis in trucks, buses and trailers (includes 264 301 901 0, 246 301 902 0 and 246 301 904 0).

Trailer 246 301 901 0

The most common programs for diagnosis of WABCO systems in trailers.

Bus 246 301 902 0

The most common programs for diagnosis of WABCO systems in buses.

Towing vehicles 246 301 904 0

The most common programs for diagnosis of WABCO systems in towing vehicles.

The software that is included in the individual packages is shown in the right-hand column of the following table.

WABCO always endeavour to provide further diagnostic programs and more language versions. The following table is therefore only an overview. For an up-to-date overview of all versions of the Diagnostic Software, visit www.wabco-auto.com/sd, then click "Overview Product Numbers".

The program overview provides a list of currently available programs at a glance. Product numbers have the format 246 301 XXX 0. When ordering USB flash drive versions, simply use the value 446 301 XXX 0 instead of 246 301 XXX 0. Please use the following table to determine the XXX value.

																			in package:			
Software	**cs**	**da**	**de**	**el**	**en**	**es**	**fi**	**fr**	**hr**	**it**	**ja**	**ko**	**nl**	**pl**	**ru**	**sv**	**tr**	**zh**	**Total**	**Trailer**	**Bus**	**Towing vehicle**
ABS C	621		622		620	623		631		630			085		627	086			X		X	X
ABS D Hydraulic			650		651	416		414		415									X			X
ABS D +	604		625		628	633		635		634		417		640				637	X		X	X
ABS HPB			571		572														X		X	X
ABS SAE			629		624	653				632									X		X	X
ATC CAN Standard			564		565	603				614									X		X	
ATC Coach			864		865					618									X		X	
ATC KWP Citaro Travego			560		566	616				617									X		X	
CAN Viewer			585		599														X		X	X
CDC			583		656	063		064		065			066						X			X
EBS 1C Asia					898														X			X
EBS BUS Standard			577		578			947		005			006	948		007			X		X	
EBS CBU MAN			880		882														X		X	X
EBS EPB Bus			558		410	413				412									X		X	
EBS EPB MB Truck			517		547	519				518									X			X
EBS Euro			548		545	894		554		555			009			010			X		X	X
ECAS: 4×2 S2000			860		863	842		841		840				135		106			X			X
ECAS Bus A	059		851		861	875		876		877			014	070		015	016	869	X		X	
ECAS Bus Citaro			523		539	575		574		576			017			018	027		X		X	
ECAS CAN2			866		867	586				868	925			605				906	X		X	X
ECAS ENR MB Truck			521		874	873		871		872			074			075			X			X
ECAS Truck JED	538		529		858	856		855		857			062	537		069		568	X			X
ECAS Truck KWP K			524		850	854		852		853			052			033	034		X		X	X
EPS			896		897	035		037		036			038			039	040		X		X	X
HBS AddOn-E			690		691														X			X
IVTM			730		732	733		731		734		601	041						X	X	X	X
Modular AMT					952													953				
MTS			580		581	579		569		701				140			148		X		X	
ODR Tracker			536		692	693		655									878		X	X		
SmartBoard			609		610	917		916											X	X		
TCE			680		682	683		684		685			686	687		689	044		X	X		
TEBS-D	546	550	540	996	542	544	606	541	608	543	905		551	552		549	694		X	X		
TEBS-E	597	956	588		589	590		591	915	592			593	594	595	596	598		X	X		
TECAS	527		520		528	531		525	611	530			532	534		533			X	X		
Trailer CAN Router-Repeater			923		924														X	X		
TrailerGUARD Telematics			918																X	X		
VCS			501		502	503		504		506			052	926		507			X	X		
VCS II	783		508		510	513		511	612	512	654	638	582			781	514	780	X	X		
ZBR2			700		657														X		X	X

Table: 3-1: Program overview of the Diagnostic Software (07/2010)

Abbreviation	Language
cs	Czech
da	Danish
de	German
el	Greek
en	English
es	Spanish
fi	Finnish
fr	French
hr	Croatian
it	Italian
ja	Japanese
ko	Korean
nl	Dutch
pl	Polish
ru	Russian
sv	Swedish
tr	Turkish
zh	Chinese

Table: 3-2: Abbreviations for the language version

3.1.4 Installation of the WABCO Diagnostic Software

– Start your browser and enter the following Internet address: http://www.wabco-auto.com/mywabco
– Log into your myWABCO account with your user name and password.
– Left-click in the quick-access menu on "Download Diagnostic Software".
– Select the required Diagnostic Software package and your language.

– Click on the "Display" button.
  The download table is shown.
– Select the required Diagnostic Software from the download table by clicking the corresponding program.
  The download starts automatically. You are prompted to select whether you want to save the program onto your PC or run it directly from the Internet.
– Select the option "Run the program from this location".

➔ Once download of the desired program is complete, the program file is unzipped to a folder of your choice or the default folder C:\wabco\download. The installation starts automatically after unpacking.

3.1.5 WABCO Diagnostics Newsletter

Is the Diagnostic Software installed on your workshop computer up-to-date? It is easy to lose track when subscribing to the Diagnostic Software package which comprises almost 40 programs.

The WABCO Diagnostic newsletter provides specific information on updates for selected programs or new language versions. Use of this service is anonymous and the newsletter only includes information pertaining to diagnostics - you will not receive any mails with advertisements:

- Changes to and updates for exiting diagnostic programs
- Information on new programs in a specific language

The WABCO Diagnostic Newsletter is cost-free and can be used multiple times per company.

Registering for the WABCO Diagnostic newsletter

– Start your browser and enter the following Internet address: http://www.wabco-auto.com/sd
– Click on line "WABCO Diagnostic Newsletter".
– Enter your e-mail address and select the action "subscribe" to activate the initial subscription of the newsletter.

➔ Within a short period of time you will receive an e-mail with a link. With a click on this link you confirm that your e-mail address has not been misused.

– Enter your e-mail address a second time in the login mask and then select the action "Edit settings".

The link that you now receive by e-mail will take you to a website where you can define in detail the topics you want to be informed about in future via e-mail newsletter.

– Click individual fields to activate the newsletter for individual programs or activate complete columns or rows by clicking the language in the column header or name of the system.

  A second click on the same field will deactivate your selection. Note the other option fields for diagnostic devices and adapters as well. You can revise your personal newsletter settings by the same procedure any time you wish.
– If you no longer wish to receive the newsletter, select the function "unsubscribe" in the login mask. The newsletter is then completely deactivated.

3.1.6 License agreement

During the installation of a WABCO Diagnostic Program the license agreement is automatically displayed. You must accept the license agreement if you want to install the program.

You can also call up the license agreement on the WABCO homepage: http://www.wabco-auto.com.

A Diagnostic Subscription lasts for one year. After the expiration of the year we remind you of the extension of the contract.

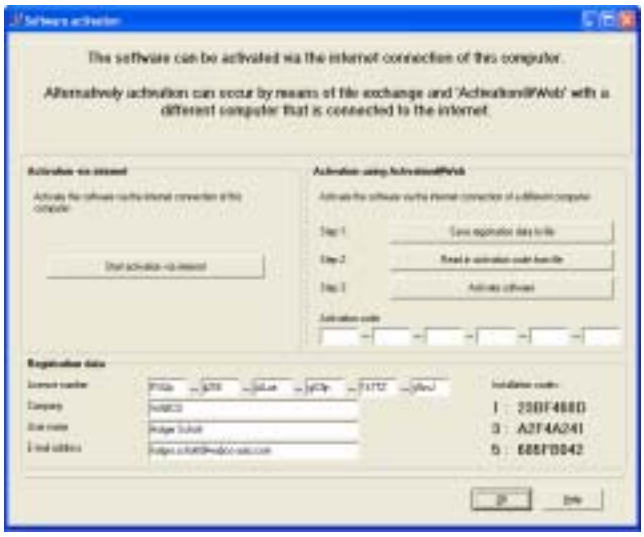
If you intend to install the Diagnostic Software on several computers, you need to purchase additional licenses. To install the software on an additional computer, copy the *.exe file of the Diagnostic Software downloaded from the Internet to the desired PC. You can now execute the program from this computer and install the Diagnostic Software.

3.1.7 Activating the WABCO Diagnostic Software

All WABCO diagnostic programs need to be activated. After installation, the program can be used without restrictions for 10 days. After this period, operation will no longer be possible without activation. Every time the program is started, you are informed of how long the program remains operational without activation.

After activation, the Diagnostic Software is tied to the PC. This means the license is used up. Therefore, only activate the Diagnostic Software on the PC on which it is meant to be used and not, for instance, on the office PC.

– To activate the software, click "Request activation codes".


The software can be activated via the internet connection of this computer.
Alternatively activation can occur by means of file exchange and 'Activation@Web' with a different computer that is connected to the internet.

You now have two options to request an activation code:

- Online

  For online activation, the computer must be connected to the Internet.
- Via WABCO Activation@Web

Online

– For online activation, click "Start Activation via Internet".

– Once you have established an Internet connection, click "Activate now".

  The message "Activation in progress..."appears and, after activation has been successfully completed, the message "Activation was successful" appears.

➔ After successful activation, the program is started. In the event that a connection could not be established, a message will appear listing the possible causes.

If you are unable to correct the cause, you can activate the software only via Activation@Web.

Activation@Web

Activation@Web is a continually available Internet portal that can generate activation codes at any time of day or night. To use it, you only need a PC and an Internet connection – it is not necessary to use the PC on which the software is to be activated for this purpose.

– Start your browser and enter the following Internet address:
  http://abo.wabco.info/software_activation.php

– Enter the required data in the window.

  You can enter the data manually or use the service "Activation@Web via USB" described there. This sends the data via a USB stick.

➔ You will immediately receive the activation code for your Diagnostic Software.

Once the activation code has been successfully entered, the program is started.

3.1.8 License version

You are provided with the license version (LIC) in the download area as well as in the WABCO Diagnostic Newsletter if there is a software update.

If there is a change in the version compared with the version that you have, the Diagnostic Software must be reactivated.

3.1.9 Extended authorisation (PIN)

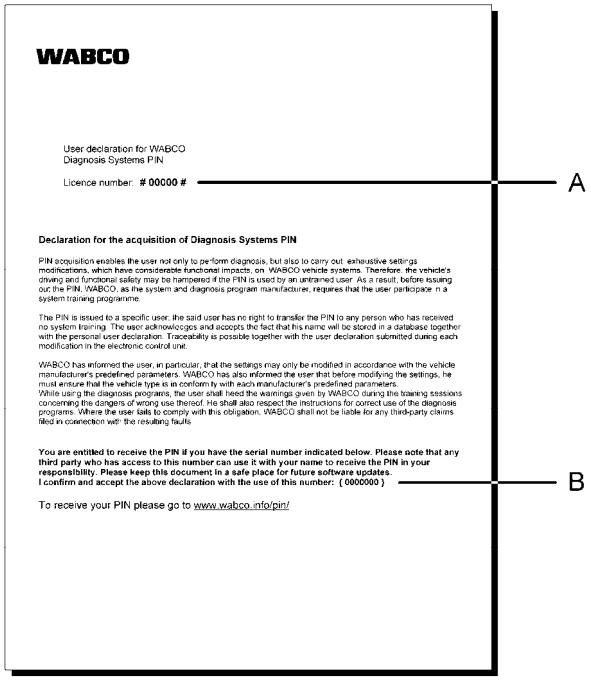
The diagnosis with the Diagnostic Software can be performed by any user. If parameters are to be changed however, authorisation is required (PIN). You can obtain this PIN through the respective training at the WABCO University. More information on WABCO University training courses can be found on the Internet under www.wabco-university.com.

After participating in a respective training course at the WABCO University, they can request a Personal Identification Number (PIN) for their WABCO Diagnostic Software from WABCO. This PIN is used to enable extended functions of the Diagnostic Software and change the settings in the electronic control units.

You can obtain this PIN directly from the Internet, provided you have received a license letter having completed a corresponding training program.

Login with License Certificate

– Start your browser and enter the following Internet address: www.wabco.info/pin.
– Login with your license number and the confirmation number of your license letter (as password).


WABCO

User declaration for WABCO
Diagnosis Systems PIN

Licence number: # 00000 # — A

Declaration for the acquisition of Diagnosis Systems PIN

PIN acquisition enables the user not only to perform diagnosis, but also to carry out extensive settings modifications, which have considerable functional impacts, on WABCO vehicle systems. Therefore, the vehicle's driving and functional safety may be hampered if the PIN is used by an untrained user. As a result, before issuing our the PIN, WABCO, as the system and diagnosis program manufacturer, requires that the user participate in a system training programme.

The PIN is issued to a specific user, the said user has no right to transfer the PIN to any person who has received no system training. The user acknowledges and accepts the fact that his name will be stored in a database together with the personal user declaration. Traceability is possible together with the user declaration submitted during each modification in the electronic control unit.

WABCO has informed the user, in particular, that the settings may only be modified in accordance with the vehicle manufacturer's predefined parameters. WABCO has also informed the user that before modifying the settings, he must ensure that the vehicle type is in conform ity with each manufacturer's predefined parameters.
While using the diagnosis programs, the user shall heed the warnings given by WABCO during the training sessions concerning the dangers of wrong use thereof. He shall also respect the instructions for correct use of the diagnosis programs. Where the user fails to comply with this obligation, WABCO shall not be liable for any third-party claims filed in connection with the resulting faults.

You are entitled to receive the PIN if you have the serial number indicated below. Please note that any third party who has access to this number can use it with your name to receive the PIN in your responsibility. Please keep this document in a safe place for future software updates.
I confirm and accept the above declaration with the use of this number: (0000000) — B

To receive your PIN please go to www.wabco.info/pin/

fig. 3-3: License letter

B License letter number
B Confirmation number

– Confirm that your personal data are correct or request a change.

➔ You receive a PIN for all programs and versions for which you have obtained a training certificate.

3.1.10 PIN version

You are provided with the PIN version in the download area as well as in the WABCO Diagnostic Newsletter if there is a software update.

If there is a difference in the new version compared with the version that you are using, you will require a new PIN. You can obtain it through the respective training at the WABCO University.

3.2 Hardware

3.2.1 PC / laptop

WABCO offers you a workshop-suitable, impact- and contamination-resistant laptop. On request, it can also be delivered with preinstalled diagnostic software (product number 446 301 999 0).

fig. 3-4: Laptop „Toughbook“

The Diagnostic Software will run on all standard PCs with an operating system Microsoft Windows 2000 or higher however.

There are no other special requirements of the hardware. The PC must have a free USB port for the Diagnostic Interface however.

3.2.2 Diagnostic Interface

To set up the diagnosis, the WABCO Diagnostic Interface Set with product number 446 301 030 0 (USB) is required.

The set contains the Diagnostic Interface and a USB connecting cable to the PC or laptop.

The vehicle connection on the Diagnostic Interface matches the connection for the Diagnostic Controller and earlier versions of the diagnostics interface, permitting the continued use of connecting cables used in the past.

Depending on the WABCO electronic system you wish to diagnose, you will require corresponding connecting cables (see chapter 4 "Cable for diagnosis", page *18*).

Diagnostic Interface Set (USB) 446 301 030 0

fig. 3-5: Diagnostic Interface Set (USB)

The set includes:

- Diagnostic Interface,
- USB connecting cable to PC/Notebook

The USB driver required for installing the Diagnostic Interface (USB) is installed during the installation of the WABCO SD Software.

The USB driver and an installation manual can also be downloaded via the Internet. It can be obtained via www.wabco-auto.com/sd on the Internet. You will find the required links in the "WABCO System Diagnostics" window.

The earlier versions of the Diagnostic Interfaces with serial connection (446 301 021 0) and with USB connection (446 301 022 0) can still be used. The connecting cable of the Diagnostic Interface with serial connection is connected to the 9-pin COM interface on the PC.

4 Cable for diagnosis

4.1 Diagnostic accessory case

WABCO offers accessory cases matching the Diagnostic Software packages. These cases include the cables that are most commonly used. Not all cables that WABCO offers are contained in the accessory case however.

Having these accessory cases means you will always have the most important connecting elements between ECU and your PC on hand. Once the vehicle has been diagnosed, all cables can be stored in a manner where they are protected as well as easily identified. If you already own the individual components, you may also order the case without alone (without content).

The following combinations of WABCO accessory case and Diagnostic Software packages make good sense:

- Diagnostic Software package **Full** 246 301 900 0
  - Accessory case for trailer 446 301 023 0
  - Accessory case for towing vehicles 446 301 025 0
  - In addition: to any bus diagnostic cables that may be required
- Diagnostic Software package **Trailer** 246 301 901 0
  - Accessory case for trailer 446 301 023 0
- Diagnostic Software package **Towing vehicle** 246 301 904 0
  - Accessory case for towing vehicles 446 301 025 0
  - In addition: Diagnostic Interface Set 446 301 030 0 (not included in case)
- Diagnostic Software package **Bus** 246 301 902 0
  - Accessory case Bus 446 301 026 0

4.1.1 Accessory case for trailer 446 301 023 0

The accessory case provides accessories and cables for the diagnosis of systems in trailers.

(accessory without content: Product number 446 301 024 0)

fig. 4-1: Accessory case Trailer 446 301 023 0

Product number	Name
446 301 030 0	Diagnostic Interface Set (USB)
446 301 024 0	Case
446 300 360 0	CAN Diagnostic Adapter
446 300 361 0	CAN cable adapter
446 300 329 2	Diagnostic cable for trailer
449 612 010 0	VCS I diagnostic cable with socket OE
449 615 010 0	VCS II diagnostic cable with socket OE
449 672 030 0	Trailer EBS diagnostic cable with OE junction box
815 XX0 037 3	Brochure "Diagnostics"

4.1.2 Accessory case for towing vehicles 446 301 025 0

The accessory case for towing vehicles perfectly supplements the Diagnostic Software package of the same name to cover diagnosis of the towing vehicles. This case was deliberately designed without Diagnostic Interface. It is therefore a perfect supplement for everyone who already owns the accessory case for trailers 446 301 023 0 and do not require a second Diagnostic Interface. Customers who purchase such a case for the first time and therefore do not have a Diagnostic Interface yet, can order the interface separately. Space for the interface is provided in the case so that all required components can be stored together.

(accessory without content: Product number 446 301 019 0)

fig. 4-2: Content of the accessory case for towing vehicles 446 301 025 0

Product number	Name
446 300 327 0	Connection adapter EPS, 35-pin
446 300 340 0	Diagnostics cable (for Mercedes)
446 300 344 0	Diagnostic cable EBS Euro (for Neoplan)
446 300 345 0	Diagnostic cable (for MAN)
446 300 349 0	Diagnostics cable EBS (for IVECO)
446 300 404 0	Diagnostic cable ABS-D
446 300 453 0	Diagnostic cable EBS (for DAF)
446 300 454 0	OBD Diagnostics cable (for Mercedes)
446 300 456 0	Connecting cable ECAS
446 300 460 0	OBD Diagnostic cable 15-pin (for DAF, Scania, MAN)
446 301 019 0	Case
894 604 303 2	Diagnostic cable ABS D/E (ISO 9141)

4.1.3 Accessory case Bus 446 301 026 0

This accessory case contains all important cables to perform diagnosis of WABCO components in buses. This case also includes a Diagnostic Interface. It is designed to match the contents of the Diagnostic Software package "Bus".

(accessory without content: Product number 446 301 019 0)

fig. 4-3: Content of the accessory case for buses 446 301 026 0

Product number	Name
446 300 340 0	Diagnostics cable (for Mercedes, EvoBus)
446 300 344 0	Diagnostic cable EBS Euro (for Neoplan)
446 300 345 0	Diagnostic cable (for MAN)
446 300 347 0	Diagnostic cable (for Setra NF 315 MTS)
446 300 454 0	OBD Diagnostics cable (for Mercedes, EvoBus)
446 300 460 0	OBD Diagnostic cable 15-pin (for DAF, Scania, MAN)
446 301 019 0	Case
446 301 030 0	Diagnostic Interface Set (USB)

4.2 ABS/ASR

4.2.1 ABS B 4-channel (towing vehicle)

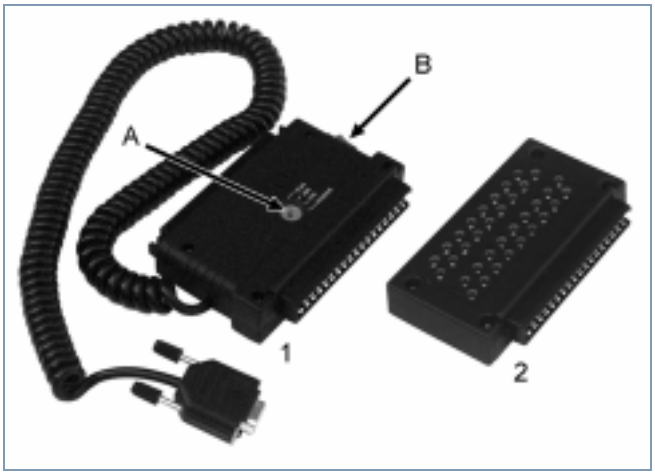


fig. 4-4: Accessories ABS B 4-channel

1 446 300 327 0 Connection adapter 35-pin (ABS, ECAS, EPS, Reserve)
2 446 300 314 0 Measuring adapter 35-pin
B Selector switch to position ABS
B Ignition ON / OFF

4.2.2 ABS/ASR C 4-channel (towing vehicle)

fig. 4-5: Accessory ABS / ASR C 4-channel

1 446 300 327 0 Connection adapter 35-pin (ABS, ECAS, EPS, Reserve)
2 894 604 303 2 Diagnostic cable (ISO 9141)
3 446 300 314 0 Measuring adapter 35-pin
B Switching to position ABS
B Ignition ON / OFF

4.2.3 ABS / ASR C 6-channel (towing vehicle)

fig. 4-6: Accessory ABS / ASR C 6-channel

1 446 300 319 0 Connecting cable 54-pin (ABS C 6-channel)
2 894 604 303 2 Diagnostic cable (ISO 9141)

4.2.4 ABS/ASR D/E (towing vehicle)

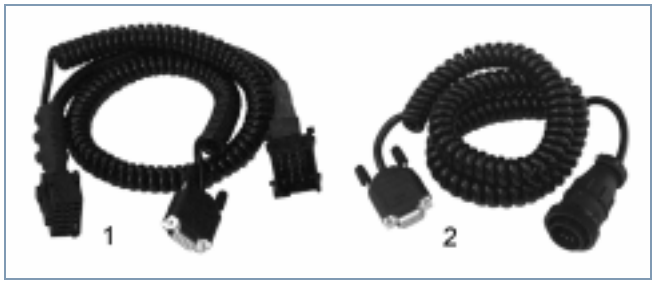


fig. 4-7: Accessory for ABS D/E

1 446 300 404 0 Connection adapter (ISO 9141)

2 894 604 303 2 Diagnostic cable (ISO9141)
446 300 408 0 Connection adapter Basic (ISO 9141)

4.2.5 ABS Vario C (trailer)

fig. 4-8: Accessory for Vario C

1 446 300 318 0 Connection cable ABS Vario C

2 446 300 329 2 Trailer diagnostic cable for external diagnostic connection

4.2.6 ABS VCS I (trailer)

fig. 4-9: Accessory for VCS I

1 449 612 010 0 Diagnostic cable with socket (length 1 m)

2 446 300 401 0 Diagnostic cable* directly to test device (length 6 m)

3 446 300 329 2 Trailer diagnostic cable

* only for electronic control units with ISO supply. Electronics with a mixed supply can be tested only by using a separate diagnostic socket!

4.2.7 ABS VCS II (trailer)

fig. 4-10: Accessory for VCS II

1 449 615 010 0 Diagnostic cable with socket (length 1 m)
2 446 300 455 0 Diagnostic cable* directly to test device (length 6 m)
3 446 300 361 0 Diagnostic cable CAN between Diagnostic Interface USB (446 301 022 0) an connection adapter CAN
4 446 300 329 2 Trailer diagnostic cable
5 446 300 360 0 Connection adapter ISO 7638 (CAN)
6 446 300 470 0 CAN Converter. Connection between Diagnostic Interface serial (446 301 021 0) and connection adapter CAN. Required for diagnosis via ISO 7638 connection.

* only for electronic control units with ISO supply. For Premium versions 400 500 081/082/084 0 and Standard version 400 500 070 0. Electronic units with mixed supply can only be diagnosed with a separate diagnostic socket!

4.3 ATC (bus)

fig. 4-11: Accessory for ATC

1 446 300 326 2 Diagnostic cable ATC (ATR)
2 446 300 317 0 Connection adapter 25-pin ATC (ITC)

4.3.1 ATC HVAC (bus)

for Mercedes, EvoBus

fig. 4-12: Accessory for ATC HLK (HVAC)

1 446 300 340 0 Diagnostic cable

4.4 CAN Viewer

fig. 4-13: Accessory for CAN Viewer

1 446 300 470 0 CAN Converter. Connection between Diagnostic Interface serial (446 301 021 0) and connection adapter CAN. Required for diagnosis via ISO 7638 connection.
2 446 300 360 0 Connection adapter CAN 7-pin (ISO 7638)
3 446 300 458 0 Connection cable CAN Viewer 7-pin (ISO 7638)
4 446 300 459 0 Connection adapter CAN 15-pin (ISO 12098)

Set-up of cable connection to vehicle via ISO 7638 (7-pin):

- Diagnostic Interface USB (446 301 022 0 / 030 0) or Diagnostic Interface serial (446 301 021 0)
  with
- CAN Converter (446 300 470 0)
- Connection adapter (446 300 360 0)
  with
- Connection cable (446 300 458 0)

Set-up of cable connection to vehicle via ISO 12098 (15-pin)

- Diagnostic Interface USB (446 301 022 0 / 030 0) or Diagnostic Interface serial (446 301 021 0)
  with
- CAN Converter (446 300 470 0)
- Connection adapter (446 300 459 0)

4.5 EBS

4.5.1 EBS EPB (Mercedes)

fig. 4-14: Accessories CDC

1 446 300 340 0 Diagnostic cable
2 446 300 454 0 diagnostics cable for Mercedes

4.5.2 EBS Euro (towing vehicle)

fig. 4-15: Accessories EBS Euro

1 446 300 344 0 Connection adapter
2 446 300 349 0 Diagnostic cable for IVECO Stralis
3 446 300 453 0 Diagnostic cable for DAF
4 446 300 460 0 OBD Diagnostic cable 15-pin for DAF, Scania, MAN

4.5.3 TEBS (trailer)

fig. 4-16: Accessories TEBS

1 446 300 329 2 Diagnostic cable in combination with an external diagnostic socket, otherwise 449 672 030 0 is required in addition.
2 446 300 360 0 Connection adapter CAN (ISO 7638)
3 446 300 361 0 Diagnostic cable CAN. Connection between Diagnostic Interface USB (446 301 022 0 / 030 0) and connection adapter CAN.
4 446 300 470 0 CAN Converter. Connection between Diagnostic Interface serial (446 301 021 0) and connection adapter CAN. Required for diagnosis via ISO 7638 connection.
5 449 672 030 0 Diagnostic cable with connection socket should no external diagnostic socket be installed.

4.6 ECAS

4.6.1 ECAS/ESAC (towing vehicle)

fig. 4-17: Accessories ECAS

1 446 300 327 0 Connection adapter 35-pin (ABS, ECAS, EPS, Reserve), 446 300 317 0 connection adapter 25-pin (ECAS)
2 446 300 311 0 Measuring adapter 25-pin (ECAS, ATC, only ECAS 4x2-A); 446 300 314 0 measuring adapter 35-pin (ECAS, ABS)
3 894 604 303 2 Diagnostic cable (ISO 9141)
4 446 300 456 0 Connection adapter (ECAS CAN II)
B Selector switch to ECAS
B Ignition ON / OFF

4.6.2 ECAS/ESAC (Mercedes)

for ECAS/ESAC ENR/ESR (CAN) Mercedes-Benz ACTROS, ECAS Mercedes-Benz, EvoBus

fig. 4-18: Accessories ECAS / ESAC (Mercedes)

1 446 300 340 0 Diagnostic cable

4.6.3 ECAS/ESAC (MAN, Iveco)

fig. 4-19: Accessories ECAS/ESAC

1 446 300 345 0 Diagnostic cable for MAN
2 446 300 349 0 Diagnostic cable for IVECO

4.6.4 ECAS (trailer)

fig. 4-20: Accessories ECAS

446 300 329 2 Trailer diagnostic cable for external diagnostic connection

4.7 EPS (Towing vehicle)

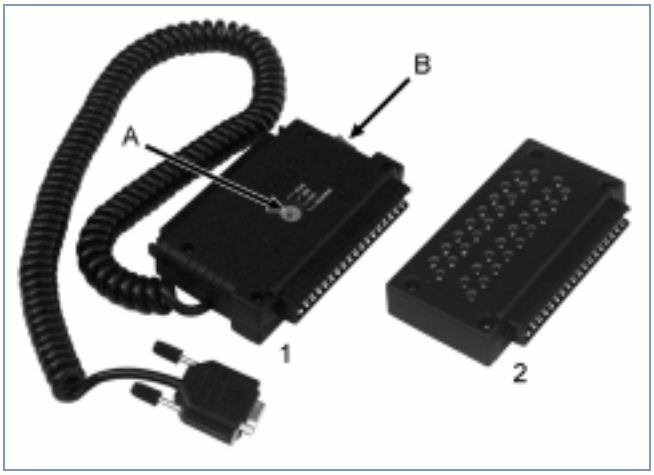


fig. 4-21: Accessories EPS

1 446 300 327 0 Connection adapter 35-pin (ABS, ECAS, EPS, Reserve)
2 446 300 314 0 Measuring adapter 35-pin
B Switch to position EPS
B Ignition ON / OFF

4.8 ETS (Bus)

fig. 4-22: Accessories ETS

1 446 301 200 0 Connection adapter 25-pin
2 446 300 311 0 Measuring adapter 25-pin

4.9 IVTM

fig. 4-23: Accessories IVTM

1 446 300 348 0 Diagnostic cable, between Diagnostic Interface USB (446 301 022 0 / 030 0) and ECU
2 446 300 360 0 Connection adapter* CAN (ISO 7638)
3 446 300 361 0 Diagnostic cable* CAN. Connection between Diagnostic Interface USB (446 301 022 0 / 030 0) and connection adapter CAN.
4 446 300 470 0 CAN Converter*. Connection between Diagnostic Interface serial (446 301 021 0) and connection adapter CAN. Required for diagnosis via ISO 7638 connection.

* required only for trailers

4.10 MTS (Bus)

fig. 4-24: Accessories MTS

1 446 300 340 0 Diagnostic cable for 14-pin junction box for Mercedes-Benz, EvoBus
2 446 300 347 0 Diagnostic cable for 14-pin junction box in the footwell (for KK NF315 / SETRA)

4.11 TCE (Trailer)

fig. 4-25: Accessories TCE

1 446 300 329 2 Diagnostic cable

2 446 300 360 0 Connection adapter CAN (ISO 7638)

3 446 300 361 0 Diagnostic cable CAN. Connection between Diagnostic Interface USB (446 301 022 0 / 030 0) and connection adapter CAN.

4 446 300 470 0 CAN Converter. Connection between Diagnostic Interface serial (446 301 021 0) and connection adapter CAN. Required for diagnosis via ISO 7638 connection.

4.12 ZBR (CVC) / Central Board Computer

fig. 4-26: Accessories ZBR

446 300 345 0 Diagnostic cable for MAN

5 Testing devices and ancillary equipment

5.1 Test kit case for compressed air braking systems 435 002 007 0

fig. 5-1: Test box

Due to its comprehensive contents, the WABCO Test Case permits quick and accurate testing of compressed air braking systems complying with the applicable guidelines.

For further information, please refer to document 815 970 035 3 "Arbeitsanleitung/Instructions 435 002 007 0" (de, en).

5.2 Compressed air test kit "Agriculture" 435 002 011 0

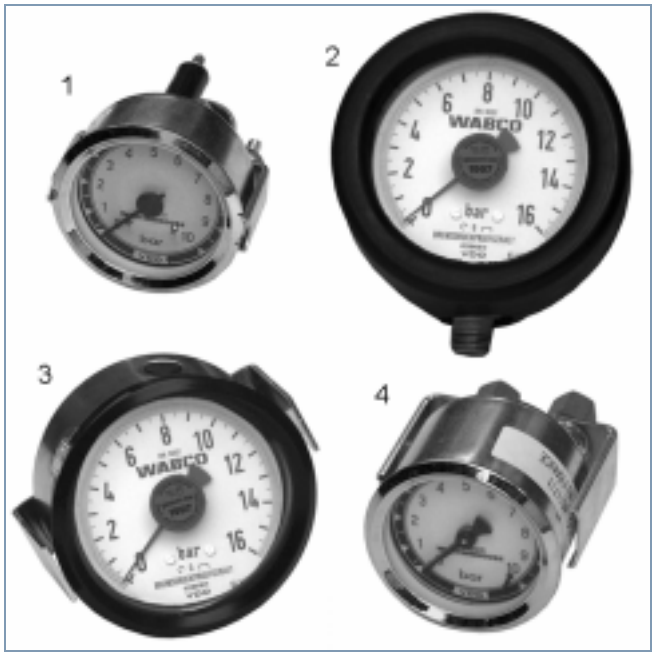
fig. 5-2: Compressed air test kit "Agriculture"

This test kit can be used for testing compressed air systems in tractors and compressed air brake systems in agricultural and forestry towing vehicles.

More information can be found in the brochure "Compressed air braking systems in vehicles for agriculture and forestry - Troubleshooting". This is available in English (815 010 083 3) German (815 020 083 3).

5.3 Pressure gauge

Pressure gauges are used for measuring the air pressure in compressed air braking systems. Depending on the vehicle size and the respective equipment, multiple pressure gauges can be used for measuring.



1 453 002 000 0 pressure gauge for instrument panel, max. 10 bar, Ø 60 mm, illuminated
453 004 005 0 pressure gauge calibrated, max. 10 bar, Ø 100 mm

2 453 004 007 0 pressure gauge calibrated, max. 16 bar, Ø 100 mm
453 004 009 0 pressure gauge calibrated, max. 25 bar, Ø 100 mm

3 453 004 012 0 pressure gauge calibrated, max. 16 bar, Ø 100 mm

4 453 197 000 0 double pressure gauge for instrument panel, max. 10 bar, Ø 60 mm, illuminated

5.4 LSV Testing equipment 435 008 000 0

fig. 5-3: LSV- testing exquipment

For testing and adjusting the load sensing valves on vehicles with air suspension systems.

For further information, please refer to document 815 020 032 3 "Arbeitsanleitung/Instructions 435 008 000 0" (de, en).

5.5 LSV Adjuster 899 709 1XX 2

fig. 5-4: Load Sensing Valve Adjuster

Two variants of the LSV adjuster are available for adjusting the pneumatic LSV controller:

- 899 709 109 2 for the series 475 714 … and 475 715 …
- 899 709 114 2 for the series 475 721 … and 475 723 …

5.6 Test connector 446 007 316 0

fig. 5-5: Test connector

For testing the function of the ISO 7638 interface on the towing vehicle (24 V). Only vehicles with hitching mechanism.

5.7 Flashing code connector 446 300 334 0

fig. 5-6: Flashing code connector

For VARIO Compact ABS with external diagnostic socket (flashing code read out without diagnostic controller).

5.8 WABCO Compact Tester 446 300 400 0 / 430 0

You can read the error memory of the WABCO electronics system with the WABCO Compact Tester. The connecting cable for the vehicle is the same as for the Diagnostic Interface. For operating the WABCO Compact Tester, three push-buttons are used. The display is alphanumeric. The meaning of the symbols is explained in the pictograph on the unit's front and rear panels of the device.

With the WABCO Compact Tester, you can:

- Read error memory
- Clear the fault memory
- Display system

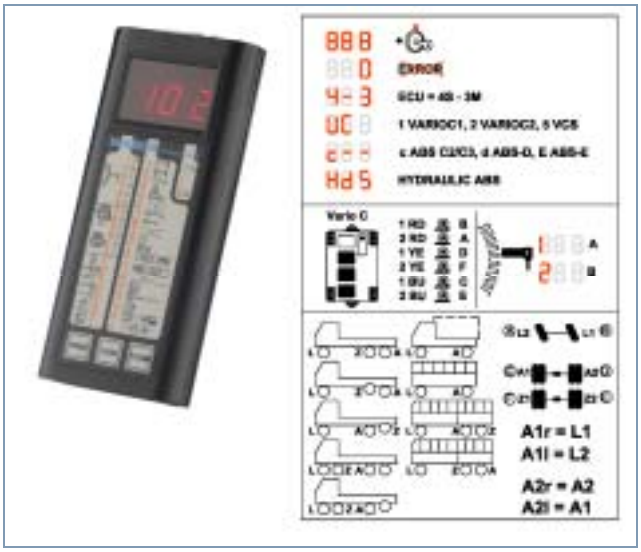
Special functions depending on the system e. g.

- System commissioning
- Functional test
- Read total kilometre counter
- Display ISS limit speed
- Reset service interval
- Extended error display

Depending on the WABCO system you wish to diagnose, you will require corresponding connecting cables (see chapter 4 "Cable for diagnosis", page *18*).

WABCO Compact Tester 446 300 400 0 for trailer ABS

WABCO Compact Tester II 446 300 430 0 for towing vehicle, trailer and hydraulic ABS (also VCS II)



6 W.EASY Complete Premium

Diagnostic tools for commercial vehicle systems by WABCO and other manufacturers can be obtained through our Joint-Venture WABCOWÜRTH Workshop Services GmbH.

W.EASY Complete Premium is a diagnostic system for commercial vehicles that integrates the WABCO competence into a complete solution.

You can diagnose the following systems in towing vehicles and trailer vehicles of various manufacturers with the product W.EASY Complete Premium:

- Engine control
- Gearbox control
- Brake control
- Air suspension

The original WABCO system diagnostics is also integrated in W.EASY. The scope of delivery for W.EASY Complete Premium includes hardware and software.

Hardware

- Laptop Panasonic "Toughbook"
- Vehicle communication unit (VCI) with USB connection

- extensive selection of diagnostic cables and connection adapters for towing vehicles and trailer vehicles of various manufacturers

- Plastic case

Software

- WABCO System Diagnostics for Commercial Vehicles
- Multi-brand commercial vehicle diagnostic software
- Content management software

The software has a clearly arranged menu structure, intuitive operation including text search and keywords. Integrated help functions and function descriptions allow diagnosis with just a few clicks.

You also get access to:

- Vehicle data, Technical data
- Service information, maintenance plans
- Circuit diagrams
- Labour rates (optional)

Regular updates always keep the diagnostics system up to date.

WABCOWÜRTH offers you a custom made package for diagnostics on trailer vehicles and transporters. More information can be found on the Internet under www.wabcowuerth.com.

Use the following contact data if you have questions on W.EASY, want additional information or if you want to purchase the product.

WABCOWÜRTH Workshop Services GmbH
Benzstraße 7, D-74653 Künzelsau
Phone: +49 79 40/98 18 63-800
Fax: +49 79 40/98 18 63-5555
E-mail: info@wabcowuerth.com
Internet: http://www.wabcowuerth.com

7 XD – Expert Diagnostics

XD stands for Expert Diagnostics and designates the WABCO diagnostics of WABCO systems and as well as systems that are not developed and manufactured by WABCO. XD is a universal tool with general functions.

7.1 Compact package 446 302 001 0

Product number	Name
446 302 011 0	Smart Handheld Tester (+ accessories) case
246 302 003 0	Generic Software CV (for Smart Handheld Tester)
446 302 017 0	Smart Card for Handheld Tester (for initial unlocking)
446 302 020 0	Cable set Generic (towing vehicle, bus, trailer) case

7.1.1 Accessory case Generic XD 446 302 020 0

Product number	Name
446 302 400 0	Multiswitch, SL31293
446 302 401 0	Interface, FLA, SL31121
446 302 402 0	Interface, PSA, SL31122A
446 302 404 0	Interface, PSA/FIAT, 30-pin, SL31132A
446 302 405 0	Interface, Ford, 5-pin, SL31134
446 302 406 0	Interface, Ford, 3-pin, SL31135
446 302 407 0	Interface, VW, 2+2 pin, SL31136A
446 302 408 0	Interface, Skoda, 5-pin, SL31137
446 302 409 0	Interface, Renault, SL31139
446 302 410 0	Interface, Renault, 12-pin, SL31147
446 302 411 0	Interface, Mercedes, 38-pin, SL31191
446 302 412 0	Towing vehicle adapter cable, IVECO, 30-pin, SL31298, for Stralis, EuroStar, EuroTech, EuroTrakker, EuroCargo, EuroFire, IrisBus and Astra series
446 302 413 0	Towing vehicle adapter cable, IVECO, 30-pin, SL31299, for Daily
446 302 414 0	Towing vehicle adapter cable, EBS Euro Mercedes/WABCO, 14-pin, SL31303, for Sprinter, Actros, Atego, Volkswagen LT
446 302 415 0	Trailer adapter cable, WABCO, 7-pin, SL31305, for WABCO trailer systems
446 302 416 0	Towing vehicle adapter cable, RVI, 12-pin, SL31307, for Kerax, Magnum, Maxter, Midliner m, Premium
446 302 417 0	Towing vehicle adapter cable, DAF, 16-pin, SL31308, for DAF
446 302 418 0	Motor vehicle adaptor cable, SCANIA, 16 pins, SL31309
446 302 419 0	Towing vehicle adapter cable, MAN, 12-pin, SL31337, for TGA
446 302 421 0	Trailer cable, HALDEX, 4-pin, SL31367, for central diagnostic plug
446 302 420 0	Interface, J1962-B, SL31350
446 302 422 0	Trailer cable, HALDEX, 4-pin, SL31368
446 302 423 0	XD Ford specific EOBD, SL31330
446 302 427 0	XD trailer cable, Knorr, 7-pin, SL31385
446 302 428 0	XD towing vehicle adapter, VOLVO, 8-pin, SL31424
446 302 430 0	XD Truck Adapter, MAN, 37-pin for F2000, L2000
446 302 432 0	XD Truck Cable, RENAULT, J1962-B (from 2009 in case)

7.2 Advanced Package 446 302 102 0

Product number	Name
446 301 020 0	Cable set WABCO (towing vehicle, bus, trailer) case
246 301 900 0	WABCO Software Update
246 302 001 0	Generic Software CV (download only)
446 302 010 0	Smart Module (+ accessories) case
446 302 018 0	Smart Card for Smart Module (for the initial unlocking)
446 302 015 0	DVD drive for Toughbook
446 302 020 0	Cable set Generic (towing vehicle, bus, trailer) case
446 302 040 0	Laptop Toughbook (English keyboard)

7.2.1 Diagnostic accessory case 446 301 020 0

The accessory case provides accessories and cables for the diagnosis of systems in trailers, towing vehicles and buses.

(accessory without content: Product number 446 301 019 0)

fig. 7-1: Diagnostic accessory case 446 301 020 0

Product number	Name
446 301 022 0	Diagnostic Interface Set (USB)
446 301 019 0	Case
446 300 327 0	EPS connection adapter, 35-pin
446 300 404 0	ABS/ASR "D/E" Connection adapter
446 300 329 2	Diagnostic cable for trailer
446 300 340 0	EBS Mercedes-Benz ACTROS diagnostic cable
446 300 344 0	EBS Euro diagnostic cable
449 612 010 0	VCS I diagnostic cable with socket OE
449 672 030 0	Trailer EBS diagnostic cable with OE junction box
815 XXX 037 3	Brochure Diagnosis

For further cables and accessory cases for WABCO System Diagnostics see chapter 4 "Cable for diagnosis", page *18*.

7.3 Advanced Package 446 302 104 0

(without WABCO cable set and WABCO Software Subscription)

Product number	Name
446 302 020 0	Cable set Generic (towing vehicle, bus, trailer) case
246 302 001 0	Generic Software CV (download only)
446 302 010 0	Smart Module (+ accessories) case
446 302 018 0	Smart Card for Smart Module (for the initial unlocking)
446 302 015 0	DVD drive for Toughbook
446 302 040 0	Laptop Toughbook (English keyboard)

7.4 Advanced Package 446 302 106 0

(without laptop and laptop accessories)

Product number	Name
446 302 020 0	Cable set Generic (towing vehicle, bus, trailer) case
246 302 001 0	Generic Software CV (download only)
446 302 010 0	Smart Module (+ accessories) case
446 302 018 0	Smart Card for Smart Module (for the initial unlocking)

7.5 Premium package 446 302 103 0

Product number	Name
446 301 020 0	Cable set WABCO (towing vehicle, bus, trailer) case
246 301 900 0	WABCO Software Update
246 302 001 0	Generic Software CV (download only)
446 302 010 0	Smart Module (+ accessories) case
446 302 015 0	DVD drive for Toughbook
446 302 018 0	Smart Card for Smart Module (for the initial unlocking)
446 302 020 0	Cable set Generic (towing vehicle, bus, trailer) case
446 302 021 0	Trolley
446 302 024 0	Docking station for Toughbook
446 302 026 0	Bag for Toughbook
446 302 027 0	12V / 24V Adapter for Toughbook
446 302 036 0	Trolley cover
446 302 040 0	Laptop Toughbook (English keyboard)

7.6 Premium package 446 302 105 0

(without WABCO cable set and WABCO Software)

Content as for Premium version, **without**:

Product number	Name
446 301 020 0	Cable set WABCO (towing vehicle, bus, trailer) case
246 301 900 0	WABCO Software Subscription

WABCO Vehicle Control Systems (NYSE: WBC) is a leading supplier of safety and control systems for commercial vehicles.
For over 140 years, WABCO has pioneered breakthrough electronic, mechanical and mechatronic technologies for braking, stability, and transmission automation systems supplied to the world's leading commercial truck, trailer, and bus manufacturers.

WABCO is headquartered in Brussels, Belgium. For more information, visit **www.wabco-auto.com**

WABCO

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